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PATENT

wherein the artificial long terminal repeat vector is formed by ligating an artificial long terminal repeat to the ends of a target nucleic acid, wherein the artificial long terminal repeat is formed by replicating a terminal repeat circle by rolling circle replication primed by a rolling circle replication primer,

wherein the target nucleic acid sequence is amplified.

27. (New) The method of claim 26 wherein the amplification of the artificial long terminal repeat vector is primed by two strand displacement primers.

28. (New) A method of amplifying a target nucleic acid sequence, the method comprising:

amplifying an artificial long terminal repeat vector by strand displacement replication primed by two or more strand displacement primers,

wherein the artificial long terminal repeat vector is formed by ligating an artificial long terminal repeat to the ends of a target nucleic acid,

wherein the target nucleic acid sequence is amplified.

29. (New) The method of claim 28 wherein the amplification of the artificial long terminal repeat vector is primed by two strand displacement primers.

30. (New) The method of claim 28 wherein the amplification is performed under substantially isothermal conditions.

31. (New) The method of claim 28 wherein the amplification does not involve thermal cycling.

32. (New) The method of claim 28 wherein the method does not include thermal cycling.

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33. (New) The method of claim 28 wherein the artificial long terminal repeats each have at least five repeat units.

34. (New) The method of claim 32 wherein the artificial long terminal repeats each have at least 25 repeat units.

35. (New) The method of claim 28 wherein the artificial long terminal repeat is produced by replicating a terminal repeat circle by rolling circle replication primed by a rolling circle replication primer.

36. (New) The method of claim 35 wherein the artificial long terminal repeat is made double-stranded by performing the rolling circle replication in the presence of helicase, primase, ligase, and single-stranded DNA binding protein.

37. (New) The method of claim 35 wherein the artificial long terminal repeat is made double-stranded by ligating together oligonucleotides hybridized to the artificial long terminal repeat strand made during the rolling circle replication.

38. (New) A method of amplifying nucleic acid molecules, the method comprising:
amplifying artificial long terminal repeat vectors by strand displacement replication primed by two or more strand displacement primers,
wherein the artificial long terminal repeat vector is formed by ligating an artificial long terminal repeat to the ends of a nucleic acid molecule with cohesive ends, wherein the nucleic acid molecule is produced by digesting a nucleic acid sample with a type II restriction endonuclease having an interrupted palindrome recognition sequence or a type IIS restriction enzyme,

wherein the nucleic acid molecule is amplified.

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39. (New) The method of claim 38 wherein the amplification of the artificial long terminal repeat vector is primed by two strand displacement primers.

40. (New) The method of claim 38 wherein a set of artificial long terminal repeats is used, wherein each member of the set has a different cohesive end, and wherein the cohesive ends of the members of the set collectively include complements to all possible cohesive ends that can be generated by cleavage with the restriction endonuclease,

wherein the artificial long terminal repeat ligated on each end of the nucleic acid molecules depends on the sequences of the cohesive ends of each nucleic acid molecule.

41. (New) The method of claim 40 wherein the artificial long terminal repeats are ligated to the nucleic acid molecules in multiple separate reactions where each reaction has a different pair of artificial long terminal repeats.

42. (New) The method of claim 38 wherein the nucleic acid sample is a sample of genomic nucleic acid.

43. (New) A method of amplifying a target nucleic acid sequence, the method comprising:

amplifying an artificial long terminal repeat vector by strand displacement replication primed by two or more strand displacement primers,

wherein the artificial long terminal repeat vector is formed by ligating an artificial long terminal repeat to the ends of a target nucleic acid, wherein the artificial long terminal repeat is formed by ligation of multiple identical repeat units,

wherein the target nucleic acid sequence is amplified.

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44. (New) The method of claim 18 wherein the amplification of the artificial long terminal repeat vector is primed by two strand displacement primers.

45. (New) A kit for amplifying a target nucleic acid sequence, the kit comprising a repeat circle, wherein the repeat circle is a single-stranded circular DNA molecule, a rolling circle replication primer comprising a sequence complementary to a sequence in the repeat circle, and a tail sequence, and

a strand displacement primer, wherein the strand displacement primer comprises a sequence matching a sequence in the repeat circle.

46. (New) A kit for amplifying a target nucleic acid sequence, the kit comprising a repeat circle, wherein the repeat circle is a single-stranded circular DNA molecule, and a strand displacement primer, wherein the strand displacement primer comprises a sequence matching a sequence in the repeat circle.

47. (New) A kit for amplifying a target nucleic acid sequence, the kit comprising a rolling circle replication primer comprising a sequence complementary to a sequence in a repeat circle, and a tail sequence, wherein the repeat circle is a single-stranded circular DNA molecule, and

a strand displacement primer, wherein the strand displacement primer comprises a sequence matching a sequence in the repeat circle.

Please cancel claims 1-25.

Remarks

Claims 26-47 are pending. Claims 1-25 have been canceled. Claims 26-47 are newly added. New claims 26-44 are based on original claims 1-19, respectively, and generally find W109286